Ambition and jealousy. Income interactions in the "Old" Europe versus the "New" Europe and the United States

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AMBITION AND JEALOUSY.
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Abstract Using individual-level data from a large number of countries, this paper examines how self-reported subjective well-being depends on own income and reference income, where reference income is defined as the income of my professional peers. It uncovers a divide between "old" -low mobility- European countries *versus* "new" European post-Transition countries and the United States. Whereas in the old Europe, the income of my reference group exerts a negative effect on my individual welfare, it has a positive impact in the new Europe and the United States. This finding is interpreted as reflecting the relative importance of comparisons ("jealousy") versus information ("ambition"), which in turn depends on the degree of mobility and uncertainty in the economy.

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In modern democracies, income inequality is certainly one of the issues that most strongly divide the population into constituencies for different political parties. On what grounds are these political attitudes based: self-centered interests or concerns for others, benevolence or envy? This paper is one of a series that investigate the subjective perception of income distribution (e.g. Piketty, 1995, Benabou and Ok, 2001, Alesina et al., 2001, 2004, 2005, Corneo and Gruner, 2000, Ravallion and Lokshin, 2001, Fong, 2001, 2004; see Senik (2005a) for a survey). From a subjective point of view, income distribution has two dimensions. One is income inequality in general, i.e. the distribution of aggregate income. The other is the gap between my own income and that of some relevant other: when the income of, say, my colleagues raises above mine, what is the consequence on my welfare? This paper is dedicated to this question.

It explores the idea that the difference between my own income and that of a reference group can be interpreted in two different ways, and accordingly, have two opposite welfare effects: relative deprivation versus welfare enhancing "anticipatory feelings" (Caplin and Leahy, 2001). Hirschman (1973) dubbed the latter the "Tunnel Effect". The idea is that individuals can derive

positive flows of utility from observing other people's faster progression if they interpret this movement as a sign that their turn will come soon, for instance if the other lane of cars starts progressing towards the exit while their lane is still immobile during a traffic jam inside a tunnel[1]. In mundane words, the objective of this paper is thus to elucidate empirically the following question: when it comes to one's relative position on the income ladder, which is the dominant passion: jealousy or ambition?

It is important to distinguish these two different types of social interactions (see Manski and Straub, 2000) because they imply different policy measures: comparison effects constitute an argument for measures that equalize income or consumption, whereas the prospect for mobility does not. Income comparisons have many other consequences that cannot be derived from informational learning; in particular, they call into question the relevance of growth as an objective of economic policy, and as an aggregate measure of welfare (Frank, 1997, Lungqvist and Uhlig, 2000, Cooper et al., 2001, Easterlin, 2003; see Luttmer (2005) for a more extensive list). Whether ambition dominates jealousy or not is thus a matter of interest for economic policy.

This paper argues that both types of interactions always coexist but that their respective importance depends on the degree of mobility and uncertainty of the economic environment, as perceived by a country's inhabitants. It concentrates on the perception of one's professional reference income, defined as the typical income of the group of people who share the same productive characteristics. It relies on a comparative micro-econometric approach, with over one million observations, based on the recourse to subjective satisfaction variables.

In the past, the use of subjective data often raised surprise or suspicion. This literature has now gained its "*lettres de noblesse"* in the *Journal of Economic Literature* (Frey and Stutzer, 2002), the *Journal of Economic Perspectives* (Di Tella and MacCulloch, 2006) and the *American Economic Review* (Frijters et al., 2004, Kahneman et al., 2004); I refer to these articles, to the recent survey by Clark et al. (2006) or to the book by van Praag and Ferrer-i-Carbonnel (2004), for a discussion of the reliability of subjective questions.

To date, the existing evidence about comparison income, based on subjective data, has essentially been obtained using single country studies, based on stable industrialized Capitalist economies. Existing studies mostly confirm that income utility is relative, starting with van de Stadt *et al*.'s (1985) work with Dutch panel data, followed by Clark and Oswald's (1996) and Clark's (2003) studies using the *British Household Panel Survey*, and Ferrer-i-Carbonell's paper (2004) based on the *German Socio-Economic Panel*. Concerning the United States, McBride (2001), Blanchflower and Oswald (2004) and Luttmer (2005) validate the relative income hypothesis. By contrast, a companion paper by Senik (2004) tends to corroborate Hirschman's conjecture in the case of Russia.

The present paper proposes to go further with a comparative approach. It uses two types of variability: time variability (country panel data whenever available) and differences between Eastern Europe, Western Europe and the United-States. The time dimension is necessary to control for idiosyncratic cultural effects. Country differences are interpreted as exogenous differences in terms of income volatility and mobility. The question is whether these differences are relevant "parameters" of the relation between welfare and Reference Income. In the case of Poland, the time dimension also coincides with a structural change that is exploited as an

identification strategy.

I find that the effect of reference income is negative in "old" European countries, whereas it is positive in post-Transition economies and in the United States. Together with the evidence brought by Alesina, et al. (2004), this suggests that the attitude towards income distribution divides Eastern Europe and the United States on the one side, and the "Old Europe" on the other side. I show that these findings are related with the degree of perceived income mobility in these economies.

The next section presents the structure of the identification strategy; Section II details the statistical procedure; Section III presents and discusses the results; Section IV concludes.

I. IDENTIFYING HIRSCHMAN'S EFFECTS

The objective of the paper is to identify the channels from Reference Income to individual welfare. I try to disentangle information effects from comparison effects and to show that the relative importance of these two effects depends on the type of economic environment that is perceived by people.

I.1 Disentangling Ambition from Jealousy

Jealousy, i.e. relative utility, implies that my utility derives not only of my own consumption but rather from a combination of absolute and relative consumption U(C, C/C*) where C* denotes

some measure of the consumption of some relevant others. If so, indirect income utility must also be written U (Y, Y*), where Y* is the income of my reference group, and one expects a negative sign on the partial derivative of the second term.

Jealousy, however, is not the only way one can look at other people's income. Ambition can sometimes be a more powerful passion. Following Hirschman (1973), consider a society composed of two individuals (or groups of individuals). The indirect utility of individual A depends on her own income Y^A, on her expected income E^A and on agent B's income Y^B. Suppose that A's expectations partly depend on B's observed income. The utility function of A is: $U^A = V(Y^A, E^A(Y^B), Y^B)$. The sign of $\partial V/\partial Y^A$ is unequivocal. It is also clear that the term $\partial V/\partial E^A$ is positive and reflects the depreciation rate of agent A. However, the sign of the partial derivative $\partial V/\partial Y^B$ is ambiguous: $\partial V/\partial Y^B = (\partial V/\partial E^A \,.\, \partial E^A/\partial Y^B) + V_3$ (1).

The first term of equation (1) is positive; it represents the information effect of B's income, Y^B, on A's utility. The magnitude V_3 represents the direct effect of Y^B on V; its sign depends on how A feels about B. If, in line with the theory of relative income, her feelings are dominated by envy rather than compassion, then this term is negative. Hence, the effect of an increase in B's income, everything equal, is *a priori* unknown, depending on the relative importance of the information and comparison effects. Empirically, the sign of $\partial V/\partial Y^B$ can be interpreted as a test of the relative importance of these two effects.

In order to test the importance of jealousy versus ambition, the idea is simply to run a standard regression of individual satisfaction (U^A) on the usual socio-demographic factors augmented with Reference Income Y^B together with individual income Y^A. The test consists in observing the sign of the coefficient on Y^B. If the coefficient on Y^B is negative, I conclude that the effect

of V_3 is dominant: comparisons dominate information. If the coefficient on Y^B is positive, I infer that the information effect ($\partial V/\partial E^A$. $\partial E^A/\partial Y^B$) dominates V_3. Of course, if the coefficient on Y^B turns out not to be statistically significant, it is still possible that there are non-market income interaction that are too small to show up as statistically significant or that there are opposing non-market interactions that have a net effect of approximately zero.

I.2 The influence of the economic context

The prediction of Hirschman's model is that the informational value of Reference Income should be higher in more mobile and uncertain environments such as those of the "New Europe' and the United-States, as opposed to countries of the "Old Europe". In other words, the nature of the environment is a parameter of $\partial V/\partial E^A$. I thus endeavor to test this prediction by comparing the effect of Reference Income on Satisfaction in these three different environments.

I distinguish three different economic contexts: Eastern Europe, Western Europe and the United States. I assume that for the majority of the inhabitants, living in either area is not the result of self-selection; this is particularly clear for the citizens of Eastern Europe who, at the beginning of the considered period, i.e. the early 1990's, only recently acquired the right to move and whose environment has been radically and suddenly transformed by the "Transition" to capitalism.

The three groups of countries can be characterized in the following stylized way. Firstly, Eastern post-Transition countries are economies with a high level of uncertainty: macroeconomic uncertainty about GDP and employment, and microeconomic uncertainty about the adaptation of individual firms and workers to the changing demand for their specific products or skills. This

translates into a high degree of volatility in individual incomes. By contrast, West European economies are far more stable and predictable. Western Europe and the United States, in turn, are taken to differ by the degree of perceived income mobility (c.f. section IV.1). Alesina et al. (2004) have shown that this translate into different attitudes toward income inequality across the Atlantic Ocean. Here, I test whether this influences the perception of one's professional reference group's income.

For Poland, the panel data includes both the pre-transition (1987-1990) and post-transition (1994-2000) periods. This prolonged time span allows analyzing the effect of the sudden and exogenous increase in volatility brought about by the overnight implementation of the shock therapy, on the first of January 1990 (Sachs, 1993). The Polish context thus offers a sort of "natural experiment" in the sense that the conditions in which people appreciate the income of their professional peers change abruptly in the course of the period of observation. This constitutes an ideal setting for capturing the role of the environment in the relation between Reference Income and subjective Well-Being.

II. A TWO-STAGES ESTIMATION STRATEGY

Given my own level of income, how does the income of my professional group influence my welfare? In order to confront the comparison versus information effects, I follow the structure of Hirschman's model transposed to the individual level. For each individual i, I thus distinguish her own income Y_{it} and the income of her reference group $\hat{Y}_{it}$, which are the equivalent of Y^A

and Y^B in equation (1).

The method comprises two stages. In the first stage, I estimate the "Reference Income" of each individual in the sample, where Reference Income is interpreted in a professional sense, i.e. the typical income of people who share my productive characteristics. In a second stage, I plug this estimation, i.e. the predicted Reference Income, in the regression of Satisfaction, controlling for the usual socio-demographic variables.

The role of expectations is tested only indirectly through the interpretation of the sign of the Reference Income variable in the regression of Satisfaction. This is because most datasets at hand do not include a variable that can proxy expectations. However, in the Russian survey (RLMS), the presence of such a variable allows verifying that the channel from Reference Income to Life Satisfaction does work via Expectations.

II.1 The first-stage estimation of Reference Income

"Reference Income" is defined as the typical income of my professional peers, i.e. of people who share my productive skills and position. It is constructed as the post-estimation prediction of the typical income of each individual in the sample, based on his productive characteristics. This definition of the Reference Income is based on two justifications: first, people with the same skills and occupation offer a natural benchmark for comparison; second, considering learning from others, I can learn about my own prospects by observing the average destiny of my professional peers, i.e. the average pay for people who share my skills. Hence, the "professionally equivalent" is a suitable reference category with which to test the information *versus* relative income conjectures. This obviously would not be the case of other types of

groups such as neighbors.

Following Clark and Oswald (1996), I thus estimate, for each available year*country, the logarithm of the typical real income of an individual, based on his sex, education, years of experience, occupation, region, industry and part-time/full-time contract (when available). It is important to use individual income (instead of household income) so as to capture the part of the income that is due to the characteristics of the individual and not to his family situation (transfers)[2].

I run this estimation over the whole sample of individuals, excluding those who do not report individual income, following the idea that comparisons and extraction of information are based on the actual, observed, income of relevant persons, and not on an econometric reconstitution of what that income would have been, had the latter fully participated in the labor market. However, I have checked that correcting for participation bias using Heckman's (1979) maximum likelihood estimator, with gender and the presence of a young child as selection variables, does not change the results (Senik, 2004).

In the first-stage estimation, I thus estimate an earnings equation of the form:

$$Y_{it} = a_0\, sex_i + a_1\, education_{it} + a_2\, experience_{it} + a_3\, occupation_{it} + a_4\, industry_{it} + a_5\, region_i + a_6\, full\text{-}time_{it} + \varepsilon_{it} \quad (2)$$

And I construct Reference Income as the predicted $\hat{Y}_{it}$ for each individual*year*country.

This exercise can be understood as the willingness to take seriously the question of whether, within my own total income, there are really two separate components: the "social" component

$\hat{Y}_{it}$, which is the typical income that I can expect, given my skills and occupation, and the "personal" or residual part that is due to my own personal circumstances ($\varepsilon_{it} = Y_{it} - \hat{Y}_{it}$), these two parts playing a separate role in the genesis of satisfaction. De facto, another specification of the econometric model consists in regressing Satisfaction on Reference Income and Residual Income (ε_{it}), the latter reflecting the effect of the strictly "personal" part of Own Income; a working paper version of this article shows that this specification leads to the same results (Senik, 2005b).

II.2 The second stage estimation of individual welfare

In the second stage, I include the first-stage predicted individual income ($\hat{Y}_{it}$) in a well-being equation. Hence, I regress Satisfaction on objective socio-demographic variables together with the estimated Reference Income, own individual income and individual fixed effects (when panel) or time dummies (for repeated cross-sections). Depending on the dataset, I use life satisfaction, financial satisfaction, or satisfaction with one's economic situation; the latter are considered to be acceptable proxies for economic well-being or welfare (Ravallion and Lokshin, 2001).

To avoid multicollinearity, I exclude some of the right-hand side variables in the first stage estimation from the second stage Life Satisfaction regression, except age, age square, education and gender (which have an obvious influence on both variables, but for different reasons). I assume that the purely productive characteristics on the right-hand side in the first-stage estimation essentially influence Life Satisfaction via Reference Income. Of course, one cannot exclude that occupation and industry do have a direct impact on life satisfaction as such, because of procedural utility for instance (e.g. Frey and Benz, 2003). However, I believe that, at the first

order, professional variables influence life satisfaction *via* my actual and potential income. Yet, I have checked that the results are robust to different specifications of the second stage regression that include more professional variables such as experience, occupation or industry.

As reference income $\hat{Y}$ is a prediction from a first-stage estimation, the conventional standard errors of the second-stage estimation are unreliable. I thus systematically report bootstrapped standard errors, based on 1000 replications.

As described in the Appendix, satisfaction variables are measured on 4 to 9 point scales, depending on the dataset. One well-known difficulty with subjective data is to implement panel data techniques to deal with individual heterogeneity, while respecting the ordinal nature of the satisfaction variable (there being no accepted general method for estimating ordered probit or logit with fixed effects). In a former version of this paper (Senik, 2005b), I estimated conditional fixed effect logit models. This implied collapsing the satisfaction variable into two categories (satisfied/dissatisfied), which led to a substantial loss of information. In this version, I present Fixed Effects OLS or simple OLS regressions of satisfaction. Ferrer-i-Carbonell and Frijters (2004) show that controlling for fixed effects is more important than respecting the ordinality of the variables. Also, OLS specifications are more transparent in term of understanding immediately the order of magnitude of the effects. The results are robust to either specifications and I refer to the working paper version (Senik, 2005b) for the other specification. Finally, to make the results comparable across surveys, I standardize the measure of subjective well-being, i.e. I divide it by its standard deviation (which implies treating it as a continuous variable)[3].

As my main interest lies in the influence of reference income, it is important to control for actual individual income. A standard caveat is that own income is likely to be endogenous to

satisfaction for two possible reasons. The first is unobserved individual heterogeneity, say "personality". This should be taken care of by panel techniques. The second risk is that income and satisfaction may vary together, due to an omitted variable (say health, or a macroeconomic shock). Including time dummies rules out the risk of endogeneity for reference income, which is a social category, defined for each year. But admittedly, the problem is left unsolved for own income as time dummies do not deal with personal omitted variables such as health shocks. Actually, I have checked that the results are robust to the inclusion of the subjective health variable (when available), but I acknowledge the risk that some other individual time-varying unobserved variable biases the results. Robustness tests (tables 4-7) somewhat mitigate the problem.

When available, I also control for household expenditure in order to correct for possible measurement errors of the income variable. As is often the case, I use the natural logarithm of income: in the particular case of my model, this reflects the concavity of the utility function. The individual welfare function that I estimate hence depends on log real individual income (Y_{it}), log reference income ($\hat{Y}_{it}$), log real household expenditure (H_{it} - when available), time dummies (I_t – for repeated cross-sections) or time invariant individual fixed effects (v_i –for panels), time varying socio-demographic characteristics (X_{it}) and an error term u_{it}.

$$S_{it} = b_0 .X_{it} + b_1 .\hat{Y}_{it} + b_2 .Y_{it} + b_3 .H_{it} + v_i + I_t + u_{it} \quad (3)$$

The main interest of the paper lies with the coefficient b_1 on $\hat{Y}_{it}$ and the way it varies across groups of countries and depending on individuals' perception of income mobility.

II.3 Data

The choice of databases is guided by the requirement that they include satisfaction variables and, if possible, be panel. For **"Western" European countries**, I use 8 waves of the *European Community Household Panel* (ECHP), which was run annually from 1994 to 2001, and contains 14 European countries in a harmonized format[4] (919000 observations). I also exploit an additional separate larger database with 90000 observations, the French component (same years), provided by the national statistical office (INSEE).

Concerning the "Eastern" part of the sample, I draw on household surveys from six different countries: Russia, Poland, Hungary, Estonia, Latvia and Lithuania. The three former are panel, while the latter are cross-section. For **Russia**, I use rounds 5 to 9 (1994-2000) of the *Russian Longitudinal Monitoring Survey* (RLMS), a representative stratified sample of Russian dwelling units that includes 11130 individuals. For **Hungary**, I use the TARKI *Hungarian Household Panel*, that runs from 1992 to 1997 (6 waves) with 8237 individuals. To the best of my knowledge, there is no panel survey of **Baltic** households including subjective data. I make use of the *NORBALT II* survey of Estonia, Latvia and Lithuania that was run in 1999 on a representative stratified sample of the national population. The total Baltic sample comprises 10539 non-missing observations. For **Poland**, I exploit the national representative household survey ran by the national statistical office. Part of the national survey is organized as a panel that is renewed every 4 years. I use three separate panels: the first, 1987-1990, contains over 11000 observations; the second, 1994-1996, has 9618 observations; and the third, 1997-2000, has 6104 observations (from 1654 to 2498 individuals per year). The data pertaining to the years 1991-1993 was not made available to me.

Concerning the **United-States**, I draw on the *General Social Survey*, conducted by the *National*

Opinion Research Center at the University of Chicago since 1972, which includes from 1500 to 3000 individuals per year, for a total of 43698 observations, and contains happiness and other attitudinal questions. The *GSS* is a representative sample of the English or Spanish speaking American adults. This is not panel data, but I am not aware of any American panel data that would include the needed information together with a satisfaction question.

Lastly, I use the first wave of the *European Social Survey* (2003), which contains objective and attitudinal information about citizens of 21 countries of the **European Union**, including four "Eastern" formerly Socialist countries.

Eventually, I perform a comparative test of the welfare impact of Reference Income using a total of 1157000 observations, split 1009000 for the 15 European countries of the *European Community Household Panel*, 104000 for Transition countries (Russian, Hungarian and Polish household panels and the three Baltic countries household surveys), and 44000 for the United-States (*General Social Survey*: 1972-2002). Descriptive statistics of all databases are presented in the Appendix.

III. RESULTS

The results are consistent with a setup *à la Hirschman*: information effects are dominant in transition countries, whereas comparison effects are pervasive in stable European countries. Moreover, information effects are also dominant in the American context. Depending on the available information in each database, I run robustness tests to ascertain the cognitive effect of reference income.

For lack of space, I do not reproduce the entire regressions, but I will communicate them to any interested reader. The structure of satisfaction equations is well-known and stable (di Tella, MacCulloch and Oswald, 2003): satisfaction depends strongly on age and age square, marital status, income and gender, and more ambiguously on education.

III.1. The East-West Divide inside Europe

Table 1 and 2 show the positive influence of Reference Income on individual satisfaction in Post-Transition countries, using fixed effects OLS models when panel data are available (Table 1, Russia, Poland and Hungary) and simple OLS models when only cross-section data are available (Table 2, Baltic countries).

For simplicity, tables only display the regressions of Income Satisfaction. However, the results hold for other categories of subjective satisfaction. In Hungary for instance, reference income exerts a positive influence on satisfaction with future perspectives, with life, and with standard of living; it also improves financial expectations. In Baltic countries as well**,** reference income exerts a positive influence on satisfaction with economic situation over the past 12 months, on expectations of improvement in the household's economic situation over the next 12 months; and even on the tolerance of inequality.

A spectacular result is obtained with Polish data (Table 1). Up to 1990, Poland was still a Socialist regime (notwithstanding partial reforms), hence a regime with extremely little change and uncertainty in terms of occupations and income. Transition began abruptly in January 1990, with the so-called "shock therapy" involving *inter alia* the overnight liberalization of prices and transactions. This triggered a dynamic process of change in the income distribution and

individual prospects (Sachs, 1993). As an illustration, I calculated an index of mobility defined as the average square number of deciles change across years (see Atkinson et al., 1992, for a discussion of this indicator). The order of magnitude of this index rises from about 2 before 1990, to about 4.5 afterwards (Senik, 2005b, Table A.XI). In order to take this sharp evolution into account, I leave year 1990 aside and run the regressions on the three separate sub-periods. I obtain a negative sign for the coefficient of reference income with the panel 1987-1989, and a positive coefficient for the two subsequent panels (Table 1). I interpret this contrast between the sub-periods of the Polish panel as a powerful illustration of the fact that reference income becomes valuable information when instability rises.

By contrast, Table 3 shows that in stable European countries, the sign of Reference Income is predominantly negative, with the exception of Ireland and Spain where it is significantly positive. These results, which confirm those of Clark and Oswald (1996) and Ferrer-i-Carbonnell (2004), suggest that comparison effects most often dominate information effects in the "old Europe". As a complement to this result, I have used French data for which I have more subjective variables, from a separate French source (INSEE): I find that not only does financial satisfaction decrease with reference income, but also do other subjective variables, such as the probability of declaring that one's "*situation has improved compared to last year"*, and that "*household resources are sufficient to live on"* (See Senik, 2005b, for the corresponding tables). This comparison effect is attenuated for individuals in the upper part of the reference group: comparisons are more effective upwards. A similar asymmetry was uncovered by Ferrer-i-Carbonnell (2004) with German data.

If reference income is taken as to carry information about one's perspectives, then its positive

value should be higher for younger people, whose future perspectives are longer. This is confirmed by Table 4 who shows that indeed, in most cases, the positive impact of reference income is higher for people under the age of 41. The positive impact of reference income is also higher for individuals who experience particularly high income volatility over time, i.e. those whose standard deviation of real individual income across rounds is superior to the national mean standard deviation (Table 5).

Finally, the Russian survey allows verifying that Reference Income is used as an information category, using the subjective Expectations question: *"Do you think that in the next 12 months you and your family will live better than today or worse? (much worse/ worse/…/much better", 5 modalities).* I verify that this proxy for expectations is indeed influenced by Reference Income, and that, in turn, it influences satisfaction: I run a two-stages least squares regression of standardized Life Satisfaction on Expectations instrumented by Reference Income. In the first stage regression of Expectations, the coefficient on Reference Income is 0,0326 with a standard deviation of 0,008; in the second stage regression of standardized Life Satisfaction, the coefficient on instrumented Expectations is 3,76 with a standard deviation of 1,12. Hence, Reference Income does seem to influence Life Satisfaction *via* Expectations. I refer the interested reader to a companion paper dedicated to the role of expectations, which develops this point with more details (Senik, 2006).

As an additional verification[5], I use the first round of the European Social Survey (ESS, 2003) that covers 21 European countries, including four "Eastern" formerly Socialist countries. The ESS is not panel and there are not many observations for each country, so I build the Reference Income as the average labour income by country*occupation (ISCO 1 digit level); there are not

enough observations per country to build more precise categories. I then regress happiness on Reference Income controlling for age, age square, gender, household income, household size, employment status, education and country dummies. Of course, this is a very crude test, but it turns out that Reference Income is only positive and significant for the former Transition countries: the Czech republic, Hungary, Poland, Slovenia (and Israel - curiously)[6]; in other countries of the "old Europe" the coefficient is not significant! A possible interpretation is that this average professional income is relevant enough as a source of information in Eastern countries, but is not precise enough to play the role of a comparison benchmark in West European countries.

In summary, the data from post-Transition countries support the interpretation of Reference Income as a source of information: younger people and those more exposed to uncertainty give a higher value to the information conveyed by the income of their professional peers. Hence, the difference between Eastern and Western Europe seems to pertain to the higher volatility and uncertainty that Easterners are confronted with. The experience of Poland, i.e. the fact that the sign of the coefficient on Reference Income changes with the beginning of the Transition strengthens this interpretation.

I now turn to the American environment, which is not as volatile as that of Eastern Europe, but where income mobility is considered to be higher than in Western Europe.

III.2. Hirschman in America

A surprising result is that, in the United-States, happiness and the feeling that "life is exciting" rather than "life is dull" (two possible answers to the satisfaction question in the GSS survey)

increase with the income of one's professional peers (Table 6). For space constraints, I present the result of the regression on the pooled data (1972-2001) including year dummies, but I have checked that the result holds in year by year regressions. Column 4 shows that the effect of Reference Income is reinforced for the young (under 41 years old).

If the interpretation of this Europe/USA divide lies in the difference in social mobility, then the positive effect of Reference Income should be reinforced for those whose perception of mobility is higher. Indeed, I find that when respondents declare that their living standard is higher than that of their parents, the effect of Reference Income on the feeling that "life is exciting" is stronger (column 2 in Table 7). The positive welfare effect of Reference Income is also greater for American respondents who believe that they "*have the opportunity to advance*" (column 5). Symmetrically, for those who have experienced downward social mobility, the effect of Reference Income is weaker (column 4).

These observations somehow differ from that of Luttmer (2005) who provides empirical evidence of relative deprivation effects in the United States. However, Luttmer looks at the welfare effect of the average earnings of one's neighbors (and shows that it is negative): it is clear that the informational content of this income category differs from that of one's professional group.

III.3. Ruling out the measurement error interpretation

A standard worry about the estimates of the coefficient on reference income is that it is biased upwards because it serves as a proxy for true own income when the own income variable is measured with error. Thus a more prosaic interpretation of the results is that in the New Europe

and the GSS data, the Income variable is measured with relatively a lot of errors compared to income measures in the Western European Surveys (although there is nothing about the databases that inclines me to adhere to this view). I present three arguments that help resisting this interpretation.

The first two arguments are based on the recourse to consumption variables, under the assumption that measurement error in consumption and income are uncorrelated (cf. Ravallion and Lokshin, 2000). First, simply introducing household expenditure in the regression of satisfaction, together with own income and reference income, should correct part of the measurement error of own income. Accordingly, whenever available, I have included this variable in the list of the controls of the regressions.

Second, I instrument Own Income using Household Consumption and I verify that the coefficient on Reference Income remains positive (as well as that on Own Income). The data (here RLMS) pass this test: both instrumented log Own Income and log Reference Income are significantly positive in the regression of Life Satisfaction[7].

Third, in a previous version of this paper, I was running the regressions of Life Satisfaction on Reference Income and Residual Income (Y_{it} - $\hat{Y}_{it}$), instead of Reference Income ($\hat{Y}_{it}$) and Own Income (Y_{it}). If measurement errors were driving the results, one would expect the magnitude of the coefficient on Residual Income to be lower when the coefficient of Reference Income is higher. It is obvious from the tables in Senik (2005b) that this prediction is not verified[8]

The positive influence of Reference Income on Life Satisfaction thus seems to be a robust result, which can hardly be attributed to measurement errors in own income.

This set of results suggests that in post-Transition countries and in the United-States, the typical income of one's professional peers is used as a source of information rather than as a benchmark for comparison. By contrast, in Western Europe, comparison effects are dominant. This certainly has to do with differences in the perceived economic environment. Americans and East-Europeans[9] perceive a higher degree of mobility (and uncertainty for the latter), which gives a higher value to information. Of course mobility is not equivalent to uncertainty; however, both can have the effect of neutralizing the aversion of people to income differences, by emphasizing the informational content of the income distribution.

These different attitudes towards relative income are associated with a different tolerance to income inequality across the former iron curtain. An illustration is given by the tax structure in Europe. In average, the marginal top personal income tax rate is almost 14 points higher in Western Europe[10] as it is in Post-Transition countries (see Senik, 2005b, Table A.XII). Taxes on profits are also much lower in Post-Transition countries. A wave of low and flat tax rates has recently spread over Eastern countries - coinciding with a period of dramatic rise in income inequality (see Senik, 2005b, Table A.XIII). The interpretation offered by the paper is that this low demand for income equalization is typical of the period of transformation that the "new Europe" is experiencing, and during which informational effects are predominant. This might shed some light on the Kuznet's curve, suggesting that one of the reasons why income inequality grows during the early stage of development is because agents have a lower aversion for it, hence do not elicit redistributive tax policies.

IV. CONCLUSIONS

Using mostly panel data, with over one million observations, this paper shows that the average income in one's professional group affects individual subjective well-being negatively in "old" European countries, whereas the correlation is positive in post-Transition economies. In Poland, the relative importance of these effects is reversed with the beginning of Transition: comparison effects dominate until 1989 whereas information effects are predominant from 1990 onwards. It is remarkable that Americans react positively to a rise in their professional reference income, which makes them closer to East-Europeans than to West-Europeans.

Together with the evidence brought by Alesina et al. (2004), Alesina and La Ferrara (2005) and Alesina and Angeletos (2005), this suggests that the attitude towards income distribution divides New European countries and the United States on one side, and the "old Europe" on the other side. At a time of ongoing European enlargement, uncovering this divergence in preferences is of interest. Of course, this gap could vanish when the mobility and uncertainty that characterize countries of the New Europe decrease. Can a society keep a high degree of mobility for a long period? Whether this is actually the case of the United-States is still an open and debated question, even though such seems to be the belief of the inhabitants.

Beyond these national differences, one general lesson of this paper is the importance of income non-market interactions. Another lesson is that GDP growth remains an objective and an indicator of welfare, especially in Transition countries. With respect to this issue, this paper shows that my welfare not only improves with my own income, but that it sometimes also increases with the growth of other people's income.

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ENDNOTES

[1] The same reasoning can be held concerning the effect of income inequality in general: the prospect for upward mobility can dominate the aversion for inequality, depending on the degree of mobility expected by individuals (e.g. Benabou and Ok, 2001, Piketty, 1995).

[2] The regressions are run for each year of each country, so there is no need to cluster, except at the household level when many individuals inside the same household can be interviewed. Regressions are simple OLS. All specifications are based on individual income, which is essentially labor income. The specifications used for the first stage estimation of reference income are the following:

ECHP countries: log (personal income in PPP or personal wage in PPP) is regressed on gender, age, age square, education, industry, occupation, fulltime/part time, status (employee/independent/ etc.), tenure.

GSS (United States): log (linearized real personal income) is regressed on age, age square occupation, industry, education, region, nationality, gender.

Hungary (TARKI) : log (real individual income) is regressed on age, age square, gender, diploma, employment status, industry, foreigner (vs national). Cluster at the household level.

Poland 1987-1989 : log (real individual income) is regressed on age, age square, gender, diploma, employment status, occupation, region.

Poland 1994-1996: log (real individual income) is regressed on age, age square, gender, diploma, employment status, occupation**.**

Poland 1997-2000: log (real individual income) is regressed on age, age square, gender, diploma, employment status, occupation, industry**.**

Russia: log (real individual income) is regressed on age, age square, gender, occupation, employment status, industry, region, tenure. Cluster at the household level.

Baltic countries: log (real individual income) is regressed on age, age square, gender, education, occupation, employment status, industry, region, nationality, part-time/full time**.**

[3] I am grateful to an anonymous referee for these suggestions.

[4] In principle, the survey itself is harmonized in the sense that the same questions, with the same response categories, are asked of households in the various countries. Some countries withdrew from the project after a number of years. This is the case of the United Kingdom, for which there are only 3 years of true ECHP data (1994-1996). To make up for this defection, the ECHP data includes the national British Household Panel Survey for the years 1995-2001. Some years are missing for other countries as well: data from Germany and Luxembourg are only available for the years 1994-1996; 1994 is missing for Austria; and 1994 and 1995 are missing for Finland.

[5] I am grateful to an anonymous referee for this suggestion.

[6] The coefficients on the log Average Group Income are: 0.885***[0.364) for the Czech republic, 0.7***[0.217] for Hungary, 0.546***[0.251] for Poland and 0.783***[0.238] for Israel. The coefficients of the other countries are not significant. Average Group Income is constructed as the average labour income by country*occupation (ISCO 1 digit). Controls include age, age square, gender, household size,

marital status, children, native, education, log household income, occupation and country dummies. Standard errors were clustered by country. The satisfaction variable was standardized.

[7] I run a fixed-effects Two Stages Least Square regression of Life Satisfaction. In the first-stage regression of log Own Income, the coefficient of log Household Expenditure is 0.174*** [0.0104]; in the second-stage fixed-effects IV regression of life Satisfaction, the coefficient of log Own Income is 0.889*** [0.095] and that of log Reference Income 0.275*** [0.071]. The number of observations was 13239 with 3420 groups. Other controls were age, age square, household size, marital status, children and education level. The entire regression output is available on request.

[8] I thank two anonymous referees for suggesting these tests.

[9] Table A.XI in Senik (2005b) presents the average square number of deciles change experienced by individuals over two years. It is remarkable that the order of magnitude of this indicator is much higher in transition countries than in European countries. Based on real individual income, the average mobility indicator is about 11 in Russia, 7 in Hungary, and 5 in post-reform Poland, as against 2-3 in ECHP countries. (Note, however, that income mobility and inequality in transition countries are certainly somewhat overstated by measurement errors, as argued by Luttmer, 2002).

[10] Of course, countries of the "old Europe" itself are not perfectly identical in terms of preference for income redistribution. However, even the most liberal of them have higher taxes than do Transition countries.

Table 1. Satisfaction and Reference Income in Eastern Europe
Fixed-Effects OLS estimates of Standardized Satisfaction

	Russia	Hungary	Poland	Poland	Poland
	1994-2000	1992-1997	1989-1989	1994-1996	1997-2000
	Life satisfaction	Income satisfaction	Financial satisfaction		
Log Reference Income	0,186***	0,118***	-0,124***	0,285***	0,532***
	[0,035]	[0,007]	[0,047]	[0,130]	[0,182]
Log individual Income	0,121***	0,049***	0,086***	0,206***	0,242***
	[0,014]	[0,006]	[0,021]	[0,021]	[0,033]
Observations	10728	21372	11031	9600	4288
Number of persons	3072	5823	3700	4804	2300
R-squared	0,026	0,033	0,009	0,028	0,057
Log likelihood	-10879	-20990	-4915	-2858	-1603

Controls: age, age square, household size, marital status, children, education, log household expenditure. Excluded: employment status, industry, occupation, region.
Russia, **Life satisfaction**: *To what extent are you satisfied with your life in general at the present time* ? *Very satisfied … not at all satisfied »* (5 modalities).
Hungary, Income satisfaction: « *Please tell me on a scale from 1 to 10 how satisfied you are with your income ?»*.
Poland, Financial satisfaction : «*How do you evaluate your financial situation: "1.very good, 2.good, 3.normal, 4.bad, 5.very bad"*.
Reference income is calculated on the basis of individual monthly wage.
Standardized Satisfaction variables.
Bootstrapped standard deviation of log Reference Income (1000 replications).

Table 2. Satisfaction and Reference Income in Baltic countries
OLS Estimates of Standardized Satisfaction

	All Baltic	Estonia	Latvia	Lithuania
		Economic Satisfaction, 1999		
Log Reference Income	0,184***	0,364***	0,166**	0,207**
	[0,048]	[0,065]	[0,073]	[0,096]
Log individual income	0,363***	0,344***	0,350***	0,459***
	[0,024]	[0,026]	[0,031]	[0,044]
Observations	5466	2666	1588	1215
R-squared	0,157	0,158	0,133	0,138

Controls: age, age square, gender, household size, marital status, children, native, education, log household expenditure, country dummies in column 1.
Excluded: employment status, industry, occupation, region and part-time/full-time.
Cluster (country) column one.
Economic Satisfaction : « Considering the total situation of your household, please tell me which of the following statements best describes your situation : *we are among the well-offs … we are poor* » (5 modalities).
Reference income is calculated on the basis of individual monthly wage.
Standardized Satisfaction variables.
Bootstrapped standard deviation of log Reference Income (1000 replications).

Table 3. Satisfaction and Reference Income in Stable Europe (ECHP 1994-2000)

Fixed Effects OLS Estimates of Standardized Satisfaction

« Could you indicate on a scale from 1 to 6 your degree of satisfaction of your financial situation? »

	UK BHPS	Germany	Denmark	Netherlands	Belgium	Luxembourg	France	UK ECHP	Ireland	Italy	Greece	Spain	Portugal	Austria	Finland
Log Reference Income by wave and country	**-0,011*** ** [0,002]	**0,027*** ** [0,009]	**-0,004*** [0,002]	**0,010*** ** [0,002]	**-0,006*** ** [0,002]	**-0,063*** ** [0,022]	**0,008** [0,005]	**-0,018*** ** [0,006]	**0,026*** ** [0,007]	**0,005** [0,004]	**-0,002** [0,007]	**0,025*** ** [0,005]	**0,005** [0,005]	**-0,013** ** [0,006]	**-0,041*** ** [0,002]
Log monthly wage	0,042*** [0,005]	0,054*** [0,009]	0,055*** [0,007]	0,069*** [0,006]	0,035*** [0,006]	0,144*** [0,021]	0,077*** [0,006]	0,047*** [0,007]	0,015** [0,007]	0,009** [0,004]	0,019*** [0,006]	0,020*** [0,005]	0,038*** [0,005]	0,108*** [0,008]	0,064*** [0,005]
Observations	40845	15034	22900	42000	21077	2986	42174	12087	21124	50700	30697	42257	43945	23046	21929
Nb individuals	8697	6147	5257	9818	4707	1186	9436	6081	6460	11456	7594	11401	9587	5666	6504
R-squared	0,05	0,055	0,084	0,066	0,051	0,163	0,054	0,055	0,046	0,051	0,11	0,061	0,065	0,066	0,069
log likelihood	-54732	-19756	-29179	-54267	-26378	-3811	-55311	-15533	-27869	-67847	-41543	-57301	-58450	-30202	-28838

Controls: age, age square, household size, marital status, children, education.
Excluded: employment status, industry, occupation, part-time/full-time, tenure.
Reference income is calculated on the basis of individual monthly wage.
Standardized Satisfaction variables.
Bootstrapped standard deviation of log Reference Income (1000 replications).

Table 4. The Higher Effect of Reference Income for Younger People in Eastern Europe

OLS estimates of Standardized Satisfaction

	Russia	**Hungary**	**Baltic**	**Poland**	**Poland**
	1994-2000	1992-1998	1999	1994-96	1997-00
	Life sat.	**Income sat.**	**Economic Sat.**	**Financial satisfaction**	
Log Reference Income	**0.157*** **	**0.122*** **	**0.190** **	**0.460*** **	**0.575*** **
	[0.030]	[0.005]	[0.056]	[0.065]	[0.090]
Log individual Income	0.126***	0.096***	0.366***	0.594***	0.487***
	[0.013]	[0.009]	[0.020]	[0.022]	[0.028]
Young*Log reference Income	**0.102** **	**0.015** **	**-0.082**	**0.280*** **	**0.208** **
	[0.042]	[0.008]	[0.119]	[0.100]	[0.113]
Young	0.589**	-0.045	0.604	-1.797***	-1.291
	[0.268]	[0.094]	[0.624]	[0.667]	[0.832]
Observations	10728	17094	5466	8062	4288
R-squared	0,101	0.120	0.153	0.257	0.255

Controls: age, age square, gender, household size, marital status, children, native, education, log household expenditure, country dummies for Baltic countries, year dummies for the others.
Excluded: employment status, industry, occupation, region and part-time/full-time for Baltic countries.
Reference income is calculated on the basis of individual monthly wage.
Young is defined as less than 41 years.
Standard errors clustered by individual.
Standardized Satisfaction variables.
Bootstrapped standard deviation of log Reference Income (1000 replications).
Russia, **Life satisfaction**: *To what extent are you satisfied with your life in general at the present time* ? *Very satisfied … not at all satisfied »* (5 modalities).
Hungary, Income satisfaction: « *Please tell me on a scale from 1 to 10 how satisfied you are with your income ?».*
Baltic, Economic satisfaction : « Considering the total situation of your household, please tell me which of the following statements best describes your situation : *we are among the well-offs … we are poor* » (5 modalities).
Poland, Financial satisfaction : «*How do you evaluate your financial situation: "1.very good, 2.good, 3.normal, 4.bad, 5.very bad"*.

Table 5. The Higher Effect of Reference Income in Presence of High Volatility

OLS Estimates of Standardized Life Satisfaction

	-1	-2	-3	-4
	Russia 2000	**Hungary 1996**	**Poland 1996**	**Poland 2000**
	Life satisfaction	**Income satisfaction**	**Financial satisfaction**	
Log Reference Income	0,312***	0.157***	0.989***	0.767***
	[0,084]	[0.021]	[0.116]	[0.117]
Log individual Income	0,023	0.063*	0.352***	0.418***
	[0,038]	[0.036]	[0.047]	[0.046]
High Volatility*log Reference Income	-0,026	0.017**	0.212***	0.018**
	[0,111]	[0.007]	[0.042]	[0.007]
Observations	960	822	2666	1763
R-squared	0,096	0.212	0.258	0.228

Sub-sample of men. Regression on the last year of the panel.
Controls: age, age square, gender, household size, marital status, children, native, education, log household expenditure, year dummies, volatility.
Excluded: employment status, industry, occupation, region.
Reference income is calculated on the basis of individual monthly wage.
Volatility is measured as the standard deviation of individual income across all years of the panel. High volatility is defined as above average.
Standard errors clustered by individual.
Standardized Satisfaction variables.
Bootstrapped standard deviation of log Reference Income (1000 replications).

Russia, **Life satisfaction**: *To what extent are you satisfied with your life in general at the present time* ? *Very satisfied … not at all satisfied »* (5 modalities).
Hungary, Income satisfaction: « *Please tell me on a scale from 1 to 10 how satisfied you are with your income ?».*
Poland, Financial satisfaction : «*How do you evaluate your financial situation: "1.very good, 2.good, 3.normal, 4.bad, 5.very bad".*

APPENDIX.

DESCRIPTIVE STATISTICS

Table A.I ECHP Individual Monthly Wages in PPP

Country	Wave	Mean	Std.Dev	Country	Wave	Mean	Std.Dev	Country	Wave	Mean	Std.Dev
Austria	2	495	673	**Finland**	3	420	529	**Netherlands**	1	552	1051
	3	461	614		4	448	556		2	562	831
	4	481	633		5	497	584		3	596	1005
	5	493	644		6	512	590		4	628	922
	6	501	657		7	562	785		5	713	1124
	7	531	689		8	600	674		6	722	1088
	8	561	737	**France**	1	540	920		7	763	1072
Belgium	1	506	657		2	561	868		8	777	1272
	2	511	665		3	565	861	**Portugal**	1	228	403
	3	517	674		4	552	917		2	241	408
	4	554	711		5	616	926		3	247	410
	5	585	741		6	632	914		4	268	426
	6	596	748		7	644	949		5	274	442
	7	606	749		8	696	1016		6	292	459
	8	664	803	**Ireland**	1	415	691		7	315	499
Denmark	1	548	573		2	456	735		8	343	529
	2	602	609		3	468	730	**Spain**	1	313	588
	3	634	634		4	497	739		2	327	603
	4	703	675		5	550	815		3	335	640
	5	751	701		6	564	810		4	351	652
	6	796	728		7	604	863		5	371	668
	7	850	776		8	652	927		6	396	686
	8	884	793	**Italy**	1	336	547		7	437	739
Germany	1	580	736		2	335	544		8	469	766
	2	610	773		3	335	544	**United Kingdom**	1	527	788
	3	621	779		4	345	560	**(ECHP)**	2	552	785
Greece	1	192	393		5	354	568		3	563	784
	2	196	398		6	368	591	**United Kingdom**	1	572	773
	3	204	416		7	391	625	**(BHPS)**	2	606	808
	4	222	453		8	399	635		3	611	834
	5	236	471	**Luxembourg**	1	942	1258		4	676	908
	6	234	482		2	948	1260		5	717	1064
	7	250	508		3	934	1248		6	749	932
	8	265	527						7	780	930
									8	845	1032

Table A.II ECHP. Satisfaction with Financial Situation*: "Could you indicate on a scale from 1 to 6 your degree of satisfaction for your financial situation?"*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	57
(%)	Germany	Denmark	Netherlands	Belgium	Luxembourg	France	UK ECHP	Ireland	Italy	Greece	Spain	Portugal	Austria	Finland	UK BHPS
Not satisfied	7	3	2	6	7	7	13	7	10	7	9	8	6	3	2
2	10	5	4	7	7	8	12	9	18	23	17	18	9	7	4
3	19	12	9	17	14	22	20	18	29	35	26	35	13	16	22
4	27	25	23	29	21	32	26	28	28	27	26	34	25	31	40
5	27	35	44	28	34	28	17	22	13	8	19	5	30	32	32
Fully satisfied	10	21	19	13	17	2	11	15	2	1	4	1	16	10	
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Freq	9464	3759	8599	4205	2035	10025	10327	3403	13343	9212	11658	10891	5598	5064	8360

Based on wave 8 (2001) unless not available, in which case based on wave 1 (1994): Germany (1), Luxembourg (5), UK ECHP (7).

Table A.III Russia: Income Categories and Life Satisfaction (RLMS 1994-2000)

Individual monthly income[1]	**Mean**	**Std.dev.**	**Nb observations**	**Life satisfaction (%)**	**Not at all satisfied**	**Less than satisfied**	**Both yes and no**	**Satisfied**
Round 5	167904	227529	4081	Round 5	23	44	20	13
Round 6	314045	508328	4081	Round 6	29	39	21	12
Round 7	396623	769885	4081	Round 7	32	38	20	10
Round 8	483	768	4081	Round 8	38	35	17	10
Round 9	1230	1780	4081	Round 9	24	39	22	15
Total real household expenditure	**Mean**	**Std.dev.**						
Round 5	10949	10275						
Round 6	9121	9372						
Round 7	8156	9688						
Round 8	6042	7200						
Round 9	7020	8107						

Source : RLMS

[1] In 1998 (round 8), a monetary reform divided all prices by 1000.

Life satisfaction : "To what extent are you satisfied with your life in general at the present time?"

Table A.IV Hungary Satisfaction Categories, in % (TARKI Database)

Satisfaction with income	1992	1993	1994	1995	1996	1997
In %						
Not satisfied at all	18	15	11	11	11	11
1	9	9	8	9	9	11
2	11	12	12	14	15	18
3	11	13	13	16	16	16
4	8	10	10	11	11	12
5	19	20	20	20	19	16
6	7	8	9	7	8	7
7	6	6	7	5	6	5
8	6	5	6	4	4	4
Fully satisfied	4	3	3	2	1	1
Total	100	100	100	100	100	100

***Satisfaction variables**: "Please tell me how satisfied you are with. your income? If you are not at all satisfied, give 0; if you are completely satisfied, give 10.*

Table A.V Hungary. Real Financial Categories in Constant Prices

Year	Real household expenditure		Real individual income		Nb Observations
	Mean	**SD**	**Mean**	**SD**	
1992	20948	12676	126076	339102	7265
1993	19805	11386	112117	141032	6674
1994	20175	11287	111236	179577	6220
1995	19044	10692	99458	136663	5493
1996	19633	14551	89484	119508	4807
1997	19651	10791	89325	177487	3778

Table A.VI Poland. Real Financial Categories (Polish Household Panel, 1987-2000)

	Real individual income			Real household expenditure		
	Observations	Mean	Std. Deviation	Observations	Mean	Std. Deviation
1987	3707	152317	137649	3707	159351	95230
1988	3707	174015	172654	3707	168756	119016
1989	3707	193995	200474	3707	169259	180019
1994	4809	739	658	4809	683	434
1995	4809	761	721	4809	689	580
1996	4809	789	727	4809	706	560
1997	3052	1469	1339	3052	1323	1043
1998	3052	1424	1014	3052	1327	887
1999	3052	1433	973	3052	1325	906
2000	3051	1405	1063	3051	1320	943

In constant zlotys of the first year of each period. A change in currency unit happened in 1994.

Table A.VII Poland,: *"How do you Evaluate your Current Financial Situation?"*
(Polish Household Panel, 1987-2000)

In %	1987	1988	1989	1990	1994	1995	1996	1997	1998	1999	2000
Very bad	1,1	0,6	1,2	1,5	6,8	5,5	5,0	11,4	11,2	14,1	14,6
Bad	11,9	10,7	14,3	15,4	30,5	26,9	26,6	21,7	21,7	23,0	23,2
Normal	63,2	65,4	66,2	66,3	52,8	55,8	56,5	57,1	56,7	53,0	52,9
Good	22,4	22,3	17,7	16,3	9,5	11,4	11,3	9,5	10,2	9,6	9,0
Very good	1,4	1,1	0,7	0,6	0,4	0,5	0,6	0,2	0,3	0,4	0,4

Table A.VIII Baltic Countries (NORBALT 1999 Household Survey)

		Estonia	**Latvia**	**Lithuania**
Economic Satisfaction (%)		**Estonia**	**Latvia**	**Lithuania**
1		7	9	8
2		22	33	33
3		59	51	55
4		11	7	4
5		0	0	0
Total		100	100	100
Real individual income in constant Euros		**Estonia**	**Latvia**	**Lithuania**
	mean	183	144	125
	sd	178	178	120
Number observations		4532	2801	2397

***Economic satisfaction**: "Considering the total economic situation of your household, please tell me which of the following statements best describes your situation: 1. we feel we are among the well-off in Estonia (Latvia, Lithuania), 2. we are not rich but we manage to live well, 3. we are neither rich nor poor, 4. we are not poor but on the verge of poverty, 5. we are poor".*

Table A.IX American General Social Survey

	Real individual Income in Constant $			Life is :					Respondent is :		
Year	**Mean**	**Std. Dev**	**Year**	**dull**	**routine**	**exciting**	**Total**	**In %**	**not too happy**	**pretty happy**	**very happy**
1972	28389	20552	**In %**					1972	16,5	53,2	30,3
1973	31362	22397	1973	5,1	49,4	45,5	100	1973	13,1	51,1	35,9
1974	32125	23988	1974	4,7	51,8	43,5	100	1974	13,1	49	37,9
1975	29404	22256					100	1975	13,1	54,1	32,9
1976	28274	21368	1976	3,7	51,6	44,8	100	1976	12,5	53,4	34,1
1977	32641	29325	1977	6,8	48,9	44,4	100	1977	11,9	53,2	34,8
1978	30178	25723						1978	9,6	56,1	34,3
1980	31333	27256	1980	5,6	48,4	46	100	1980	13,3	52,7	33,9
1982	24546	20668	1982	6,6	50,2	43,1	100	1982	14,5	54,9	30,6
1983	30693	29432						1983	12,8	56,1	31,2
1984	28299	24026	1984	5	48,2	46,8	100	1984	12,9	52,3	34,7
1985	30434	27736	1985	6,5	45,6	47,9	100	1985	11,4	60	28,6
1986	28539	25023						1986	11,4	56,3	32,3
1987	28110	23270	1987	4,6	51,5	44	100	1987	13,4	57,5	29,1
1988	28917	23953	1988	5	50	45,1	100	1988	9,3	56,8	34
1989	30969	24889	1989	5,3	50,2	44,5	100	1989	9,7	57,7	32,6
1990	33096	29715	1990	5	50,1	45	100	1990	9	57,6	33,4
1991	26911	21661	1991	4,2	51,5	44,3	100	1991	11	58	31,1
1993	32577	30568	1993	6,5	47,1	46,5	100	1993	11,1	57,3	31,6
1994	31136	26879	1994	4,2	48,4	47,4	100	1994	12,2	59	28,8
1996	31991	27299	1996	4,2	45,9	50	100	1996	12,1	57,5	30,4
1998	30558	26556	1998	5,5	49,4	45,1	100	1998	12,1	56,1	31,8
2000	33227	33941	2000	4,9	48,7	46,4	100	2000	10,6	57,7	31,7
2002	34930	35834	2002	3,7	44,2	52,1	100	2002	12,4	57,3	30,3
			Mean	**5,1**	**49**	**45,9**	**100**	**Mean**	**12,1**	**55,9**	**32,1**

Table 6. Satisfaction and Reference Income in the United States

OLS Estimates of Standardized Satisfaction

GSS, 1972-2000

	-1	-2	-3	-4
	Happy	**Life exciting**	**Happy**	**Life exciting**
Log Reference Income	**0,037***	**0,052****	**0.050*****	**0.249*****
	[0,019]	[0,023]	[0.016]	[0.019]
Log individual income	0,062***	0,053***	0.122***	0.133***
	[0,008]	[0,009]	[0.007]	[0.009]
Young*Log reference Income			**0.013**	**0.045***
			[0.020]	[0.024]
Young			-0.127	0.542**
			[0.186]	[0.230]
Observations	20714	13878	27879	18656
R-squared	0,074	0,063	0.081	0.067

Controls: age, age square, gender, household size, marital status, children, native, education, log household expenditure, year dummies.
Excluded: employment status, industry, occupation, region.
Happy: "General happiness : *very happy*/*pretty happy*/*not too happy*", **Life exciting**: "*Life is dull/routine*/*exciting*"..
Young is defined as less than 41 years.
Reference income is calculated on the basis of individual monthly wage.
Standardized Satisfaction variables.
Bootstrapped standard deviation of log Reference Income (1000 replications)

Table 7. The Greater Effect of Reference Income on More Mobile People in the United-States

OLS Estimates of Standardized Satisfaction (GSS, 1974-2000)

	-1 **Happy**	-2 **Life exciting**	-3 **Happy**	-4 **Life exciting**	-5 **Happy**	-6 **Life exciting**	-7 **Happy**	-8 **Life exciting**
Log Reference Income	**0,100***** [0,016]	**0,248***** [0,020]	**0,124***** [0,030]	**0,354***** [0,038]	**-0,06** [0,057]	**0,288***** [0,072]	**0,016** [0,055]	**0,295***** [0,064]
Log individual Income	0,065*** [0,008]	0,053*** [0,010]	0,065*** [0,008]	0,053*** [0,010]	0,114*** [0,032]	0,046 [0,039]	0,062*** [0,008]	0,048*** [0,009]
Upward mobility/parents * Log Ref Inc.	**0,054** [0,047]	**0,194***** [0,068]						
Upward mobility/parents	0,42 [0,454]	1,799*** [0,650]						
Downward mobility/parents * log Reference Income			**-0,025** [0,030]	**-0,112***** [0,042]				
Downward mobility/parents			-0,177 [0,292]	-1,048 [0,404]				
R has opportunity to advance * log Reference Income					**0,031***** [0,011]	**0,001** [0,014]		
R has opportunity to advance					0,206*** [0,027]	0,097*** [0,032]		
R has no opportunity to advance * log Reference Income							**0,091** [0,058]	**-0,03** [0,073]
R has no opportunity to advance							-1,115** [0,560]	0,16 [0,704]
Observations	19964	13367	19964	13367	1450	947	22421	14949
R-squared	0,073	0,048	0,073	0,048	0,107	0,063	0,076	0,049

Controls: age, age square, gender, household size, marital status, children, native, education, log household expenditure, year dummies. Excluded: employment status, industry, occupation, region.
Reference income is calculated on the basis of individual monthly wage
Upward mobility: « *Respondent's living standard compared to parents: much better … much worse »*, 5 modalities. Available at years 1994, 1996, 1998, 2000, 2002.
Has opportunity to advance « *Respondent has the opportunity to advance : strongly agree … strongly disagree »*, 5 modalities. This variable is available at years 1982 and 1998.
Modalities 1+ 2 and 4+5 have been aggregated together in order to proxy the respondent's experience of mobility and perspectives of mobility (upward versus downward).
Happy: "General happiness : *very happy*/*pretty happy*/*not too happy"*, **Life exciting**: "*Life is dull*/*routine*/*exciting"*..
Standardized Satisfaction variables. Bootstrapped standard deviation of log Reference Income (1000 replications).